

# SVENSK STANDARD

## SS-EN 16870:2017



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### **Vattenundersökningar – Vägledning för bedömning av det hydromorfologiska tillståndet i sjöar**

### **Water quality – Guidance standard on determining the degree of modification of lake hydromorphology**



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EUROPEAN STANDARD

**EN 16870**

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2017

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English Version

## Water quality - Guidance standard on determining the degree of modification of lake hydromorphology

Qualité de l'eau - Guide pour la détermination des conditions hydromorphologiques des lacs

Wasserbeschaffenheit - Anleitung zur Bestimmung der hydromorphologischen Eigenschaften von Seen

This European Standard was approved by CEN on 4 December 2016.

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## European foreword

This document (EN 16870:2017) has been prepared by Technical Committee CEN/TC 230 “Water analysis”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2017, and conflicting national standards shall be withdrawn at the latest by August 2017.

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## Introduction

This European Standard will enable broad comparisons to be made of the hydromorphological condition of lakes throughout Europe (e.g. for reporting by the European Environment Agency). In this document, the word 'lake' is used as a generic term for standing waters including natural lakes, reservoirs, excavated pits and other artificial water bodies.

The Guidance standard for assessing the hydromorphological features of lakes (EN 16039) describes a protocol for survey (field and remote sensing methods) and feature recording, whereas this standard gives guidance on assessing the condition of those features, and focuses especially on human pressures that affect lakes. This standard has applications for nature conservation, environmental impact assessment, lake management, and guiding lake restoration work.

The assessment of lake 'quality' in Europe has evolved over the past decades from its focus on chemical conditions to a more comprehensive ecological approach. The EC Water Framework Directive (WFD) has reinforced the need for this broader view of lake 'quality' through its requirement for determining 'ecological status' based on phytoplankton, phytobenthos, macrophytes, invertebrates and fish. The Directive also requires hydromorphological and physico-chemical conditions to be suitable for supporting biological communities. This standard, therefore, may be helpful for implementing the WFD when indicating the extent to which pressures might have caused a departure from natural hydromorphological conditions. In doing so it complements methods that have been developed within particular countries for assessment and reporting under the WFD. However, this standard makes no links between hydromorphology and biology, nor does it set any hydromorphological condition targets that should be achieved. Whereas decisions on management for individual lakes require expert local knowledge and vary according to lake type, this standard provides a framework to help those decisions to be made consistently.

## 1 Scope

This European Standard provides guidance on determining the degree of modification of lake hydromorphological features described in EN 16039. It enables consistent comparisons of hydromorphology between lakes within a country and between different countries in Europe, providing a method for broad based characterization across a wide spectrum of hydromorphological modification. Its primary aim is to assess 'departure from naturalness' for a given type of lake as a result of human pressures, and it suggests suitable sources of information that may contribute to characterizing the degree of modification of hydromorphological features. For wholly artificial lakes or reservoirs formed by damming rivers the aim is to assess the extent to which processes approximate to those in comparable natural water bodies. However, this standard does not replace methods that have been developed within particular countries for local assessment and reporting. Decisions on management for individual lakes require expert local knowledge and vary according to lake type. The assessment of the hydromorphological conditions as needed for the WFD (supporting the biological quality elements) remains in the competence of the individual Member States.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15843:2010, *Water quality - Guidance standard on determining the degree of modification of river hydromorphology*

EN 16039:2011, *Water quality - Guidance standard on assessing the hydromorphological features of lakes*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **bank**

physical edge of the lake shore, or of the island(s) within, generally defined by a wave-cut break in slope at or near the water's edge of the lake, but can also be defined as the line along which riparian (terrestrial or land) conditions change to littoral in-lake conditions

[SOURCE: EN 16039:2011, definition 3.3]

### 3.2

#### **bar**

discrete, natural, depositional feature with shallow slope into water composed of unconsolidated material

### 3.3

#### **bathymetry**

systematic survey of size, shape and water depth distribution in a lake

Note 1 to entry: Bathymetry is the basis of deriving morphometric parameters and to predict thermal stratification, residence time and sediment redistribution processes.

[SOURCE: EN 16039:2011, definition 3.5]

**3.4****catchment**

drainage basin contributing water and sediment into a lake (also recognized as drainage area)

[SOURCE: EN 16039:2011, definition 3.10]

**3.5****connectivity****continuity**

uninterrupted movement of water, sediment and organisms into, out of and within a lake system

[SOURCE: EN 16039:2011, definition 3.11]

**3.6****drawdown**

lowering of lake levels caused by deliberate water release

**3.7****dune**

underwater ridge formed by wave or current action on the lake bed

**3.8****ecological status**

expression of the quality of the structure and functioning of aquatic ecosystems, by comparing the prevailing conditions with reference conditions

Note 1 to entry: As classified in accordance with Annex V of the EC Water Framework Directive.

**3.9****embeddedness**

extent to which fine sediment infiltrates littoral gravels

**3.10****gauging board****staff gauge**

graduated scale, fixed to a lake outlet or inflow structure, or directly into the substrate, used to measure the water level in a lake

**3.11****geotextile**

permeable fabric often used to reinforce or protect banks

**3.12****groundwater table**

surface of a body of underground water below which the soil or rocks are permanently saturated with water

**3.13****hard engineering**

stabilization of the shoreline using 'hard' materials including concrete walls, gabion baskets and sheet piling